The King's CHURCH OF ENGLAND SCHOOL KIDSGROVE

Curriculum plan: Engineering

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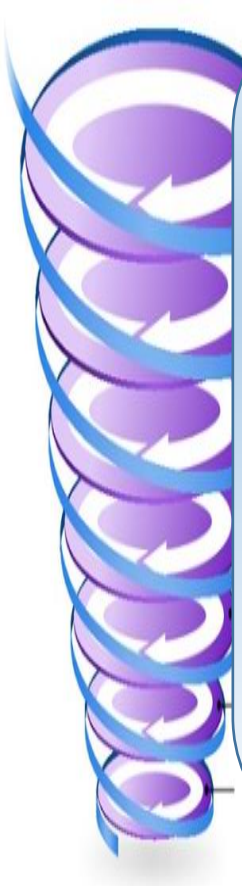
INTENT:



"'The way you learn anything is that something fails, and you figure out how not to have it fail again"

Robert Arrighi

Studying engineering at The King's allows students to understand the mechanical and physical environments of their surroundings. It helps students to foster a sense of inquisitiveness, appreciating how problems are solved and in what environment these solutions can continue to be developed so they remain in tune with our ever changing world.

As a department, we aim to provide our students with the necessary theoretical knowledge, understanding and practical skills to manufacture solutions to realistic world problems and scenarios. The strong emphasis on problem solving is linked intrinsically with creativity where students are encouraged to push boundaries, challenge the status quo and continually think 'outside of the box'.

Sharing our passion and deep subject knowledge equips our students with high quality learning experiences which will inspire, ensure outstanding progress and provide them with a range of skills to enable them to be effective participators in society. They will study a wide range of topics and have learning experiences which will widen their understanding of the mechanical and physical world. Students will be challenged by difficult tasks and be asked to respond to a range of demanding activities which will push students to value creativity and harness a deep knowledge of materials, properties and manufacturing processes.

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Half term points

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
7	**The sectors of engineering** **Learning to include:** • an introduction into the different sectors of engineering • the range of different products which engineering sectors are responsible for manufacturing • the sectors which are responsible for manufacturing a range of different products • an introductions into the different ways in which the different sectors of engineering are connected or 'interconnected' through a range of different ways		**Product manufacturing processes** **Learning to include:** **Processes** • an introduction into the different manufacturing processes used to manufacture engineered products • the range of different processes which are used to fabricate form and shape components or proprietary parts used in engineered products **Material types and properties** • an introduction into the different material types used to manufacture a range of engineered products • materials will be based upon ferrous, non-ferrous, polymeric and timber based material types • the properties of the materials will define their ultimate use • an introduction to a range of different engineering job roles, activities and responsibilities		**The design process** **Learning to include:** • the presentation of a range of different engineering problems which the learners will learn how to solve • develop an understanding of practical procedures and explore how to record, collect and interpret data in an engineering context • how to follow planned procedures, • using and test a prototype/model, assemble, handle and use materials, equipment and machinery • how to record the process • interpret the data • provide a design solution for an engineered product against the needs of an engineering brief • strategies and methods to help them to be able to redesign and evaluate their ideas	

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Half term points

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
8	**The design process** **Learning to include:** • defining a design problem • collecting information • brainstorming and analyse ideas • developing solutions • gathering feedback • making use of a range of sketching techniques including 2D and 3D • generating a response to a range of engineering briefs will be subject to peer review • employing computers to design and manufacture products and engineered solutions including CAD (Computer aided design) and CAM (Computer aided manufacture)		**Understand materials, components and processes for a given engineered product** **Learning to include:** • an investigation and analysis of material types and properties • an evaluation of the different material types used to manufacture a range of engineered products • an exploration of the different characteristics of different engineering materials • an exploration of the different parts, components and proprietary components required to manufacture engineered products • Aa evaluation of the manufacturing processes and techniques used to manufacture engineered product		**Investigate a given engineered product using disassembly techniques** **Learning to include:** • disassembling a range of engineered products using a range of different methods and techniques • exploration of the different recording methods • exploration of the different measuring methods and techniques required to disassemble and engineered product • Investigation into the use of tools and equipment to safely remove parts of components in order to disassemble or reassemble an engineered product	